

NEW SPECIES OF PREDACEOUS MIDGES OF THE TRIBE  
CERATOPOGONINI FROM SUBANTARCTIC ARGENTINA  
(DIPTERA: CERATOPOGONIDAE)

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*Abstract.*—Four new species of predaceous midges of the tribe Ceratopogonini from subantarctic Argentina are described and illustrated: *Diaphanobezzia patagonica*, *Macrurohelea fuscipennis*, *M. similis*, and *Notiohelea pilosa*. A key to the Neotropical species of *Macrurohelea* is presented.

*Key Words:* Diptera, Ceratopogonidae, Ceratopogonini, Neotropical, subantarctic, Argentina, predaceous midges

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Wirth and Grogan (1988) listed five genera of predaceous midges of the tribe Ceratopogonini whose distributions are exclusively subantarctic or nearly so: *Austrohelea* Wirth and Grogan, with 7 species, 6 are from Australia, Campbell Island, New Zealand and Tasmania, and one species from southern Argentina; *Diaphanobezzia* Ingram and Macfie, with 2 species from Argentina; *Isthmohelea* Ingram and Macfie, with one species from Chile; *Macrurohelea* Ingram and Macfie, with 12 species, 9 from Argentina and Chile and 3 from Australia; and *Notiohelea* Grogan and Wirth, with one species from Chile.

The purpose of this paper is to describe 4 new species in the tribe Ceratopogonini belonging to 3 rarely collected genera, that were recently taken by GRS in the temperate subantarctic region of southwestern Argentina. The types of these new species are deposited in the collection of the Museo de La Plata, La Plata, Argentina (MLP); paratypes of *Macrurohelea fuscipennis* and *Notiohelea pilosa* will be deposited in the Na-

tional Museum of Natural History, Washington, D.C. (USNM). In addition, a key to the Neotropical species of *Macrurohelea* is provided which includes the female of *M. paracaudata* Grogan and Wirth (1980) that was recently described by Spinelli (1987).

For an explanation of general ceratopogonid terminology, see Downes and Wirth (1981); for special terms dealing with genera in the tribe Ceratopogonini, see Wirth and Grogan (1988), Grogan and Wirth (1979), and Spinelli and Grogan (1984).

*Diaphanobezzia patagonica*  
Spinelli and Grogan,

NEW SPECIES

Fig. 1

*Diagnosis.*—Distinguished from females of *Diaphanobezzia spinellii* Wirth and Grogan (1988) by its sparsely pubescent eyes, longer 4th palpal segment, and wing with longer costa and R4+5.

*Holotype female.*—*Head:* Dark brown. Eyes broadly separated above, sparsely pu-

bescent between the lower ommatidia. Antennal scape pale brown, bearing 3 pairs of setae; pedicel dark brown; flagellum (Fig. 1a) dark brown, lengths of flagellomeres in proportion of 11-7-7-7-7-6-6-7-8-8-9-10-14; antennal ratio 0.84; flagellomeres 1-8 bearing a pair of trichoid sensilla. Palpus (Fig. 1b) uniformly dark brown; segment lengths in proportion of 3-10-14-15; palpal ratio 3.5. Mandible with 8 coarse teeth.

*Thorax:* Dark brown. Scutum covered with strong setae, anterior spine absent, 8 prealar setae and 1 postalar seta; scutellum apparently with 6 similar sized bristles. Legs dark brown; tarsomeres 1-4 of mid and hind legs slightly paler brown; femora and mid and hind tibiae armed apically with 1-2 long spines, hind tibia with 7-9 spines on extensor side; hind tibial comb with 6 spines; apices of tarsomeres 1-3 and base of hind tarsomere 1 with a pair of ventral spines, ventral surface of mid tarsomere 1 with 3 pairs of widely spaced spines; hind tarsal ratio 2.3; claws small, evenly curved, equal sized with basal inner teeth. Wing (Fig. 1c) whitish hyaline; anterior veins brownish, distal  $\frac{1}{2}$  of costa and R4+5 dark brown, all other veins barely perceptible; r-m crossvein interrupted at middle; cell R5 without intercalary veins; costal fringe dense; costal sections I-II-III in proportion of 28-25-9, R4+5 40; costal ratio 0.92; wing length 1.06 mm, breadth 0.40 mm. Halter (Fig. 1d) pale in color, sac-shaped, lacking a distinct constriction below knob, as is typical of the genus.

*Abdomen:* Dark brown. Sternites 3-5 entire, with a broad rounded caudal notch; sternite 8 (Fig. 1e) deeply notched caudally with broadly rounded posterior lobes; each arm of sternite 9 (Fig. 1e) slightly hooked; sternite 10 (Fig. 1e) with 2 pairs of setae, the posterior pair longer, cerci short. Spermathecae (Fig. 1e) subequal, slightly ovoid with short necks, each about 0.053 mm in diameter; a small vestigial 3rd spermatheca present.

Type material.—Holotype female labeled "Argentina, Santa Cruz, Rio Pinturas, 15-I-1988, G. R. Spinelli, entomological net," (MLP).

Distribution.—Argentina.

Etymology.—The specific epithet, *patagonica*, refers to the southernmost region of Argentina where the type was collected.

Remarks.—Females of *Diaphanobezzia spinellii* Wirth and Grogan (1988) differ from those of *D. patagonica* n. sp. by their densely pubescent eyes, shorter 4th palpal segment that is less than  $\frac{1}{2}$  the length of the 3rd palpal segment, its wing with shorter costa (costal ratio 0.82) and R4+5, complete r-m crossvein, and different costal proportions.

*Diaphanobezzia pellucida* Ingram and Macfie (1931) is known only from a single male but it differs from *D. patagonica* n. sp. by its larger size (wing length 1.7 mm), having intercalary veins in cell R5, and its r-m crossvein is complete.

This new species, known only from the single female holotype, was collected in the Valley of the Rio Pinturas located in the Patagonian steppe (47°S), approximately 150 km E of the subantarctic forest.

### *Macrurohelea fuscipennis*

Spinelli and Grogan,

NEW SPECIES

Fig. 2

Diagnosis.—Distinguished from females of other species in the genus by its bare eyes, wing darkly infuscated on distal  $\frac{2}{3}$ , proximal  $\frac{1}{3}$  hyaline, and spermathecae with long slender necks.

Female.—*Head:* Yellowish brown. Eyes bare, nearly contiguous. Antennal scape yellow, bearing 2 pairs of setae; pedicel dark brown; flagellum (Fig. 2a) brownish; lengths of flagellomeres in proportion of 30-18-17-17-18-18-19-20-20-20-22-25-32; antennal ratio 0.78 (0.75-0.81, n = 3); flagellomere 1 with 4 sensilla coeloconica, flagellomeres 1-8 with a pair of trichoid sensilla. Palpus (Fig. 2b) yellowish; lengths of segments in

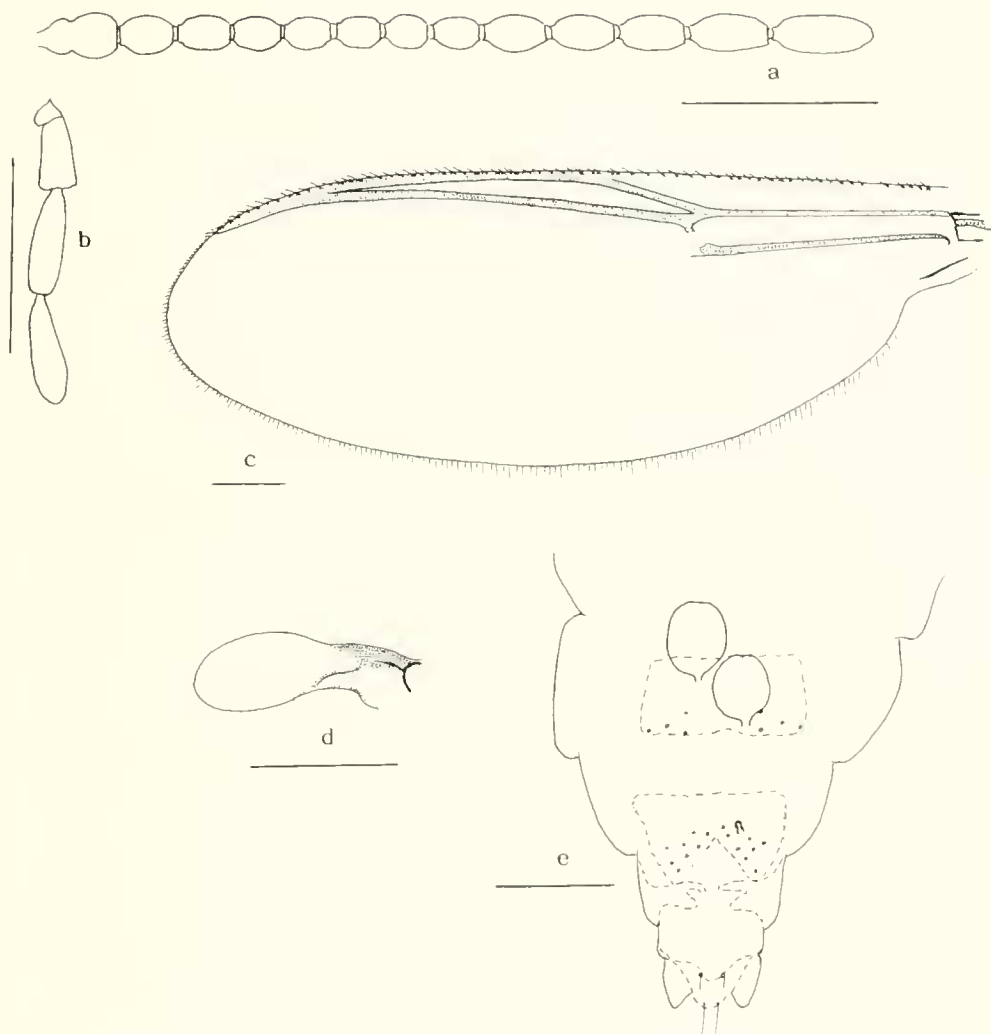


Fig. 1. *Diaphanobezzia patagonica*. a, flagellum; b, palpus; c, wing; d, halter; e, distal portion of abdomen. Scale bars = 0.1 mm.

proportion of 10-15-16-10-18; segment 3 with small sensory pit; palpal ratio 1.70 (1.40-2.00,  $n = 4$ ). Mandible (Fig. 2c) infuscated at apex, with 8 teeth.

**Thorax:** Yellowish, humeral pits infuscated, prealar areas dark brown. Scutum (Fig. 2d) covered with fine pubescence. 4 prealar setae, 1 postalar seta; scutellum (Fig. 2d) with 3-5 bristles; postscutellum dark brown. Legs yellowish, tarsomeres 4-5

slightly infuscated; hind tibial comb with 6 spines; hind tarsal ratio 2.1 ( $n = 4$ ); palisade setae on tarsomere 1 of fore and hind legs; tarsomere 4 cordiform; tarsomere 5 of fore leg 4× longer than broad, 3× longer than broad on mid and hind legs; claws small, equal sized without basal inner teeth. Wing (Fig. 2e) with proximal  $\frac{1}{3}$  whitish hyaline, veins yellowish, distal  $\frac{2}{3}$  with membrane and veins darkly infuscated; 2 radial

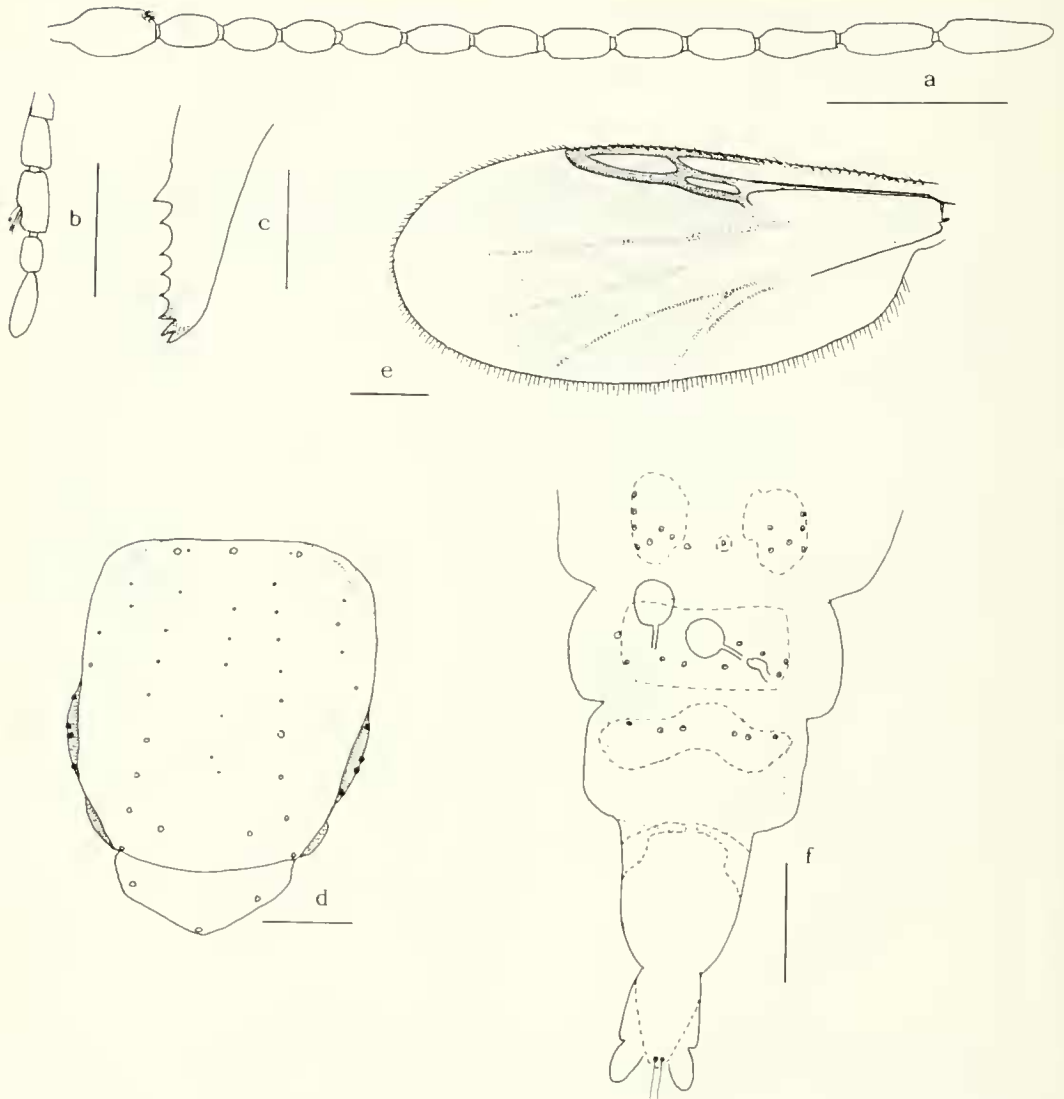


Fig. 2. *Macrurohelea fuscipennis*. a, flagellum; b, palpus; c, mandible; d, scutum and scutellum; e, wing; f, distal portion of abdomen. Scale bars = 0.1 mm (a, d-f), 0.75 mm (b), 0.02 mm (c).

cells, 2nd  $1.5\times$  longer than 1st; cell R5 without intercalary veins; costal ratio 0.69 (0.68–0.70,  $n = 4$ ); wing length 1.18 (1.10–1.26,  $n = 4$ ) mm, breadth 0.47 (0.45–0.54,  $n = 4$ ) mm. Halter whitish.

*Abdomen*: Brown. Sternites 2–6 (Fig. 2f) divided by broad unsclerotized area; sternites 7–8 (Fig. 2f) entire; each arm of sternite 9 (Fig. 2f) slender with truncate tip;

sternite 10 (Fig. 2f) with a pair of apical setae, cerci short; segments 9 and 10 elongated and bent forward ventrally as is typical for the genus. Spermathecae (Fig. 2f) subequal, spheroid, with long slender necks, each 0.034 mm in diameter and the neck 0.019 mm long; a small 3rd vestigial spermatheca present.

Type material.—Holotype female, 3 fe-

male paratypes labeled "Argentina, Chubut, Parque Nacional Los Alerces, 'El Alerzal,' 22-I-1988, G. R. Spinelli, entomological net," (MLP).

Distribution.—Argentina.

Etymology.—The specific epithet, *fusci-pennis*, refers to the distinctive wing of this species that is infuscated on its distal portion.

Remarks.—The wing that is darkly infuscated on its distal  $\frac{2}{3}$  and hyaline on its proximal  $\frac{1}{3}$  readily distinguishes this species from all other species of *Macrurohelea*. In addition, all other species of *Macrurohelea* (13 species presently known) have pubescent eyes and further differ from *M. fuscipennis* n. sp. in having spermathecae with shorter necks. *Macrurohelea dycei* Grogan and Wirth (1985) from Australia is the only other species that has spermathecal necks nearly as long, but its spermathecae are ovoid with moderately tapering necks. See the key to the Neotropical species of *Macrurohelea* below for further ways that this new species differs from others in the genus.

This new species is presently known from only 4 females which were collected in the temperate subantarctic forest of Argentina.

### *Macrurohelea similis*

Spinelli and Grogan,

NEW SPECIES

Fig. 3a, b

Diagnosis.—Distinguished from males of other species of *Macrurohelea* by the following combination of characters: small size (wing length 0.95 mm), wing without intercalary veins in cell R5, gonostylus extending  $\frac{1}{3}$  of its length beyond tergite 9.

Holotype male.—*Head*: Dark brown. Eyes pubescent, nearly contiguous. Antenna with pale scape; pedicel dark brown; flagellum and plume brown, flagellomeres distinctly separated with lengths in proportion of 20-8-7-7-7-7-6-6-6-7-12-15-9; flagellomere 1 with 2 sensilla coeloconica; antennal ratio 0.44. Palpus brown; segment lengths in pro-

portion of 5-8-9-6-11; segment 3 with well defined sensory pit.

*Thorax*: Dark brown. Scutum with 4 prealar setae and 1 postalar seta; scutellum with 3 large and 2 small bristles. Legs uniformly brown; hind tibial comb with 6 spines; hind tarsal ratio 2.2; palisade setae on fore and mid tarsomere 1; claws small, equal sized with bifid tips. Wing with membrane slightly infuscated, veins brown; 1st radial cell subequal to 2nd; cell R5 without intercalary veins; costal ratio 0.66; wing length 0.95 mm, breadth 0.36 mm. Halter stem brown; knob white.

*Abdomen*: Brown. Genitalia as in Fig. 3a, b. Sternite 9 moderately long, twice as broad as long, tapered basally, posterior margin straight; tergite 9 moderately short, triangular, gradually tapering distally with a quadrate posterolateral extension and slender pubescent cerci which are divergent and extend beyond tip of quadrate extensions. Gonocoxite slightly curved,  $2.5\times$  longer than broad with a small mesobasal lobe; gonostylus shorter than gonocoxite, greatly curved, gradually tapering to a slender pointed tip. Aedeagus short, triangular, slightly broader than long, basal arch about  $\frac{1}{2}$  of total length; basal arm nearly straight, heavily sclerotized; distal portion tapering to a moderately pointed tip. Parameres (Fig. 3b) heavily sclerotized, separate; basal arm short, broad basally, pointed apically; distal portions slender, closely approximated proximally, divergent distally, tapering near apex to a slightly bent pointed tip.

Type material.—Holotype male labeled "Argentina, Rio Negro, Parque Nacional Nahuel Huapi, camino a cascada de los Alerces, 24-I-1988, G. R. Spinelli, entomological net," (MLP).

Distribution.—Argentina.

Etymology.—The specific epithet, *similis*, is a reference to the similarity of the genitalia of this new species to those of *Macrurohelea caudata* Ingram and Macfie (1931).

Remarks.—*Macrurohelea similis* n. sp. most closely resembles *M. caudata* Ingram

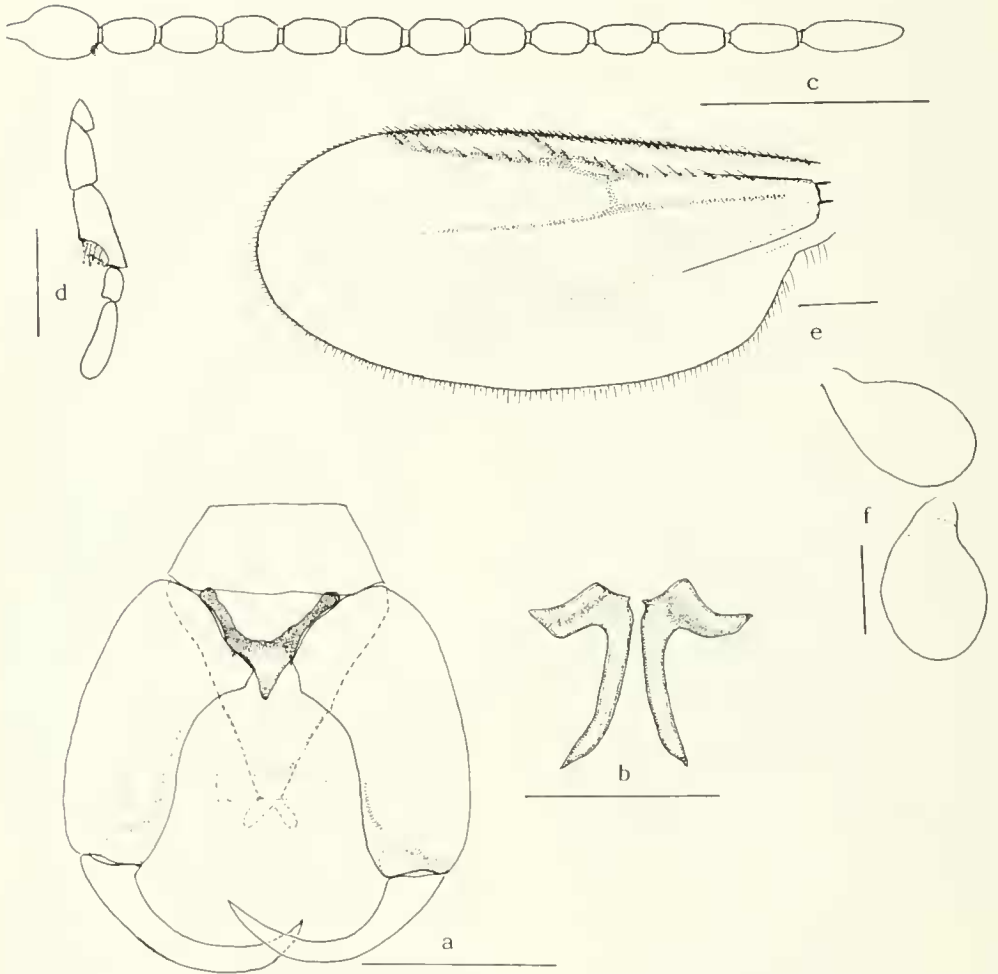


Fig. 3. *Macrurohelea similis*, a, b, and *Notohelea pilosa*, c-f. a, genitalia (parameres removed); b, parameres; c, flagellum; d, palpus; e, wing; f, spermathecae. Scale bars = 0.1 mm (a-c, e), 0.05 mm (d), 0.025 mm (f).

and Macfie (1931) by virtue of their similar male genitalia. However, *M. caudata* differs from this new species by several features of its genitalia such as, aedeagus broader distally with a square tip, cerci that arise from ventral surface of tergite 9 but do not extend beyond tergite 9, gonocoxite that is straight, and parameres with different shaped basal arm and distal portions parallel. In addition, *M. caudata* has eyes that are widely separated and bare except on extreme inner margins, and the 3rd palpal segment is longer than 5th (5th segment longer than 3rd in *M. similis* n. sp.). See the key to the Neo-

tropical species of *Macrurohelea* below for further ways in which this new species differs from other species in the genus.

This new species, which is presently known only from the male holotype, was collected in the temperate subantarctic forest of Argentina.

KEY TO THE NEOTROPICAL SPECIES OF *MACRUROHELEA*

- 1. Females ..... 2
- Males ..... 11
- 2. One spermatheca ..... 3
- Two spermathecae ..... 4

- 3. Wing with intercalary veins in cell R5; wing membrane infuscated, veins dark brown ..... *monotheca* Spinelli and Grogan
- Wing without intercalary veins in cell R5; wing membrane whitish hyaline, veins pale ..... *gentilii* Spinelli and Grogan
- 4. Wing with intercalary veins in cell R5 ..... 5
- Wing without intercalary veins in cell R5 ..... 6
- 5. Second radial cell of wing 2.5× longer than 1st, veins brown; antennal ratio 1.61 ..... *wirthi* Spinelli and Grogan
- Second radial cell of wing 3× longer than 1st, veins pale; antennal ratio 1.00 ..... *caudata* Ingram and Macfie
- 6. Second radial cell of wing twice as long as 1st ..... 7
- Second radial cell of wing at least 3× longer than 1st ..... 10
- 7. Flagellum very short, flagellomeres 9–12 broader than long, antennal ratio 0.59; very small species, wing length 0.94 mm ..... *kuscheli* Wirth
- Flagellum longer, flagellomeres 9–12 twice as long as broad, antennal ratio 0.75–1.16; small species, wing length 1.02–1.42 mm ..... 8
- 8. Wing membrane hyaline, veins gray ..... *irwini* Grogan and Wirth
- Wing membrane infuscated on at least distal ⅓, veins brown ..... 9
- 9. Wing membrane infuscated on distal ⅓, proximal ⅓ hyaline; tips of claws pointed; spermathecae with very long necks ..... *fuscipennis*, new species
- Wing membrane entirely infuscated; tips of claws bifid; spermathecae with shorter necks ..... *paracaudata* Grogan and Wirth
- 10. Flagellomeres 5–8 with apical sensilla coeloconica; legs with inconspicuous setae; wing membrane and veins pale ..... *thoracica* Ingram and Macfie
- Flagellomeres 5–8 without apical sensilla coeloconica; legs with numerous long bristly setae; wing membrane and veins infuscated dark brown ..... *setosa* Wirth
- 11. Large species, wing length 2.1 mm or greater ..... 12
- Smaller species, wing length 1.5 mm or less ..... 13
- 12. Legs with long bristly setae; wing membrane and veins infuscated dark brown ..... *setosa* Wirth
- Legs with inconspicuous setae; wing membrane and veins pale ..... *thoracica* Ingram and Macfie
- 13. Very small species, wing length 0.90–0.95 mm ..... 14
- Small species, wing length 1.3 mm or greater ..... 15
- 14. Sternite 9 with caudomedial notch; gonostylus extends to apex of tergite 9 ..... *paracaudata* Grogan and Wirth
- Sternite 9 without caudomedial notch; gonostylus extends ⅓ of its total length beyond apex of tergite 9 ..... *similis*, new species

- 15. Wing with intercalary veins in cell R5, 2nd radial cell subequal to 1st; aedeagus more or less crescent shaped ..... *caudata* Ingram and Macfie
- Wing without intercalary veins in cell R5, 2nd radial cell 1.7–2.0× longer than 1st; aedeagus triangular ..... 16
- 16. Gonostylus bent abruptly subapically at 90°; sternite 9 with deep caudomedial excavation ..... *gentilii* Spinelli and Grogan
- Gonostylus curved subapically, not bent at 90°; sternite 9 with shallow caudomedial excavation ..... *irwini* Grogan and Wirth

***Notiohelea pilosa***  
**Spinelli and Grogan,**  
**NEW SPECIES**  
 Fig. 3c–f

Diagnosis.—Distinguished from its only known congener, *N. chilensis* Grogan and Wirth (1979), by its pubescent eyes, more darkly infuscated wing with the 2nd radial cell over 3× longer than 1st, shorter proboscis, more slender 3rd palpal segment, and ovoid spermathecae.

Female.—*Head*: Brown. Eyes pubescent, narrowly separated. Antennal scape pale, bearing 3 pairs of setae; pedicel dark brown; flagellum (Fig. 3c) brown, lengths of flagellomeres in proportion of 22-13-14-14-14-13-13-13-13-14-15-16-20; antennal ratio 0.71 (0.67–0.74, n = 3); flagellomere 1 with 5 sensilla coeloconica, flagellomeres 1–8 bearing a pair of trichoid sensilla. Palpus (Fig. 3d) brown; segment lengths in proportion of 9-16-20-8-14; palpal ratio 2.10 (2.05–2.25, n = 3); segment 3 with a moderately broad apical sensory pit bearing 4–5 capitate sensilla. Proboscis short, proboscis/head ratio 0.42 (0.40–0.44, n = 2). Mandible reduced, vestigial, without teeth.

*Thorax*: Brown. Scutum densely covered with coarse setae, humeral pits present, no anterior spine, 3 prealar setae and 1 postalar seta; scutellum with 4 similar sized bristles and 6 smaller setae. Legs brown, nearly identical with those of *N. chilensis* in form and features; hind tarsal ratio 1.75 (n = 3). Wing (Fig. 3e) membrane darkly infuscated (infuscation not depicted in Fig. 3e), covered with coarse microtrichia; veins brown,

veins R1 and R4+5 with macrotrichia; 2 radial cells present, the 2nd  $3.2\times$  longer than 1st. Halter brown.

*Abdomen*: Brown. Moderately broad proximally, tapering distally at segment 5; sternite 10 with one pair of large setae; 2 ovoid, subequal spermathecae (Fig. 3f), each 0.045 mm long with neck and 0.03 mm wide.

Type material.—Holotype female labeled "Argentina, Chubut, Parque Nacional Los Alerces, 'El Alerzal,' 22-I-1988, G. R. Spinelli, entomological net," (MLP); 2 female paratypes, 1 with same data as holotype, 1 with same data as holotype except taken 23-I-1988 by CDC light trap.

*Distribution*.—Argentina.

*Etymology*.—The specific epithet, *pilosa*, is a reference to the coarse setae that cover the scutum of this species.

*Remarks*.—The only other known species in the genus, *Notiohelea chilensis* Grogan and Wirth (1979), differs from *N. pilosa* n. sp. by its bare eyes, longer proboscis (proboscis/head ratio 0.56), broader 3rd palpal segment (palpal ratio 1.82), spherical spermathecae, and more lightly infuscated wing with the 2nd radial cell only twice as long as the 1st.

This species is currently known only from female specimens that were collected in the temperate subantarctic forest of Argentina.

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